## Amendments to the Claims:

- 1. (Currently Amended): A N-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof is provided by a branched hydrophobic carbon unit, the carbon unit formed by acyclic alkyl groups and/or cycloalkanes a cyclohexane radical, the radioligand having a high affinity to TRP-M8 receptors in cells and tissues and having a specific activity of at least about 20 Ci/mmol or greater, wherein the TRP-M8 affinity is characterized by a Kd of about 1 x 10<sup>-5</sup> or less.
- 2. (Previously Presented): The radioligand as in claim 1 wherein the radiohalo moiety is covalently bound in the molecule.
- 3. (Previously Presented): The radioligand as in claim 2 wherein the radiohalo moiety is selected from fluoride and iodide radionuclides.
- 4. (Previously Presented): The radioligand as in claim 3 wherein the specific activity is about 250 Ci/mmol or greater.
- 5. (Currently Amended): The radioligand as in claim 1 wherein the alkyl moiety is represented by R, and wherein R is a saturated or monoethylenically unsaturated alkyl substituted cyclic or bicyclic alkyl radical containing a total of 7-14 carbon atoms and is selected from the group cyclopentanes, cyclohexanes, cyclohexanes, cyclohexanes, cyclononanes, [3.1.1]bicycloheptanes and hept-5-enes, [2.2.1]bicycloheptanes and hept-5-enes, and [2.2.2]bicyclooctanes and oct-5 enes, the alkyl radical containing cyclohexane radical contains from 1 to 3 C<sub>1</sub> C<sub>5</sub> normal or branched alkyl substituents.

### 6. Cancelled.

7. (Previously Presented): The radioligand as in claim 1 wherein the aryl moiety is a substituted aromatic radical represented by Y-, the substituents being

represented by R<sub>1</sub>, R<sub>2</sub>, and X, wherein

 $\mathbf{R}_1$  is selected from the group hydrogen, hydroxyl,  $C_1$  –  $C_3$  alkoxy,  $C_1$  –  $C_3$  carboxyalkyl,  $C_1$  –  $C_3$  oxycarbonylalkyl,

 $\mathbf{R_2}$  is selected from the group hydrogen, hydroxyl,  $C_1 - C_3$  alkoxy, trifluoromethyl, nitro, cyano, halo, and

X is selected from the group  $[^{18}F]$ -,  $[^{123}I]$ -,  $[^{125}I]$ -, and  $[^{131}I]$ -.

- 8. (Previously Presented): The radioligand as in claim 7 wherein the aromatic radical includes monoaromatic rings, polyaromatic rings or heterocyclic aromatic rings.
- 9. (Previously Presented): Use of the radioligand of claim 1 in radioreceptor assays.
- 10. (Previously Presented) Use of the radioligand of claim 1 for scanning or imaging tissues bearing the TRP-M8 receptor.
- 11. (Currently Amended): A composition comprising a N-radiohaloaryl-alkylcarboxamide of Formula 1:

## Formula 1

## **R-CONH-Y**

where (a) **R** is a saturated or monoethylenically unsaturated alkyl-substituted cyclic or bicyclic alkyl-radical containing a total of 7-14 carbon atoms selected from the group cyclopentanes, cyclohexanes, and [2.2.2]bicyclohexanes and hept-5-enes, and [2.2.2]bicyclohexanes and oct-5-enes, the alkyl-radical cyclohexane radical containing from 1 to 3 C<sub>1</sub> -

 $C_5$  normal or branched alkyl substituents, and (b) Y is a substituted aromatic radical containing substituents  $R_1$ ,  $R_2$ , and X, wherein

 ${f R_1}$  is selected from the group hydrogen, hydroxyl,  $C_1-C_3$  alkoxy,  $C_1-C_3$  carboxyalkyl,  $C_1-C_3$  oxycarbonylalkyl,

 $\mathbf{R_2}$  is selected from the group hydrogen, hydroxyl,  $\mathbf{C_1} - \mathbf{C_3}$  alkoxy, trifluoromethyl, nitro, cyano, halo, and

X is selected from the group  $[^{18}F]$ -,  $[^{123}I]$ -,  $[^{125}I]$ -, and  $[^{131}I]$ -.

- 12. (Currently Amended): The composition as in claim 11 wherein the alkyl cyclohexane radical of (a) contains 8-12 carbon atoms and the total number of carbon atoms in the alkyl substituents on the α and β ring carbons are from 1 to 5.
- 13. (Previously Presented): The composition as in claim 12 wherein the carboxamide group is in an equatorial position relative to the plane of the eyeloalkyl cyclohexyl ring.
- 14. (Previously Presented): The composition as in claim 11 wherein the Formula 1 compound has a specific activity of about 20 Ci/mmol or greater.
- 15. (Previously Presented): The composition as in claim 11 wherein the Formula 1 compound is a ligand for the TRP-M8 receptor.
- 16. (Previously Presented): The composition as in claim 15 wherein the Formula 1 compound has a high affinity for the TRP-M8 receptor.
- 17. 22. (Withdrawn).
- 23. (Currently Amended): A method for using a radioactive ligand, comprising: providing a N-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof includes acyclic alkyl groups and/or cycloalkanes— is a cyclohexane radical, the radioligand

having a determinably high affinity to the TRP-M8 receptor in cells and tissues characterized by a Kd of about 1 x 10<sup>-5</sup> or less and having a specific activity of at least about 20 Ci/mmol or greater; and,

contacting the radioligand with cells or tissues under conditions sufficient to permit specific binding between the radioligand and TRP-M8 receptors if said receptors are carried by the cells or tissues.

### 24. Cancelled.

25. (Previously Presented): The method as in claim 23 further comprising:

determining the amount or presence of TRP-M8 receptors in the cells or tissues of the contacting.

26. (Currently Amended): A N-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof includes comprises a cyclohexane radical and wherein the radiohalo moiety is covalently bound in the molecule, the radioligand having a high affinity to TRP-M8 receptors and having a specific activity of at least about 20 Ci/mmol or greater, wherein the TRP-M8 affinity is characterized by a Kd of about 1 x 10<sup>-5</sup> or less.

## 27. Cancelled.

28. (Currently Amended): The radioligand as in claim 27 26 wherein the radiohalo moiety is selected from fluoride and iodide radionuclides.

# 29. Cancelled.

30. (Currently Amended): The radioligand as in claim 26 wherein the alkyl moiety is represented by R', and wherein R' includes cyclohexane radical has from 1 to 3  $C_1 - C_5$  normal or branched alkyl substituents.